Listing of Claims:

1. (Original) A system for implementing multimedia calls across a private network boundary, comprising a public network and at least one private network, characterized in that the system comprises:

at least one media gateway for connecting with multimedia terminals of various protocols;

at least one boundary gateway for connecting the private network and the public network, and performing the translation of a private network address and a public network address, wherein each boundary gateway is provided with a unique subnetwork ID to correspond to the private network connected therewith;

a call controller for establishing calls and controlling service logics, in which is recorded the correspondence relationship information of all said boundary gateways and the subnetwork IDs;

wherein the call controller processes the call concerning a private network according to the subnetwork ID information.

2. (Original) The system according to Claim 1, characterized in that the media gateway, as an access point of multimedia services for the multimedia terminals connected therewith, assembles the signaling information of the multimedia terminals to the call controller into the standard signaling information according to the respective protocol, but not changing the content of the signaling message, and sends it to the boundary gateway connected with the media gateway.

3. (Original) The system according to Claim 1, characterized in that the boundary gateway is used for receiving the signaling message from a media gateway connected therewith, establishing a signaling tunnel from the boundary gateway to the call controller according to its own subnetwork ID, sending the signaling message to the call controller through the signaling tunnel, and when the media gateway initiates the call, automatically establishing a media channel to the

called side boundary gateway according to the subnetwork ID of the called side boundary gateway, to transmit the media traffic.

4. (Original) The system according to Claim 1, characterized in that the call controller receives the signaling message from the boundary gateway, returns a response message to the media gateway having sent the signaling message according to the subnetwork ID of the boundary gateway, establishes a signaling tunnel to the called side boundary gateway according to the subnetwork ID of the called side boundary gateway, and when the call is initiated, controls the establishment of a media channel according to the subnetwork IDs of the calling side boundary gateway and the called side boundary gateway.

5. (Original) The system according to Claim 1, characterized in that the private network of the system can further have private networks nested within.

6. (Original) The system according to Claim 5, characterized in that the system further comprises internal boundary gateways for connecting said private network and the nested private networks of said private network, wherein each of the internal boundary gateways is provided with an unique subnetwork ID to correspond to the private network connected therewith.

7. (Original) The system according to Claim 6, characterized in that the internal boundary gateway receives the signaling message from the media gateway connected therewith, establishes a signaling tunnel from the boundary gateway through an intermediary boundary gateway(s) to the call controller according to its own subnetwork ID, sends the signaling message through the signaling tunnel to the call controller, and when the media gateway initiates the call, automatically establishes a media channel through the intermediary boundary gateway(s) to the called side boundary gateway according to the subnetwork ID of the called side boundary gateway, to transmit the media traffic.

8. (Original) The system according to Claim 1 or 6, characterized in that each private network is provided with a unique subnetwork ID.

9. (Original) The system according to Claim 8, characterized in that the subnetwork ID of each boundary gateway is consistent with the subnetwork ID of the private network to which it belongs.

10. (Original) The system according to Claim 8, characterized in that the subnetwork ID of each internal boundary gateway is consistent with the subnetwork ID of the private network to which it belongs.

11. (Original) A method for implementing multimedia calls in a system containing a public network and private networks, the system comprising:

at least one media gateway for connecting with multimedia terminals of various protocols;

at least one boundary gateway for connecting the private networks and the public network, and performing the translation between a private network address and a public network address;

a call controller for establishing calls and controlling service logics, in which is recorded the correspondence relationship information of all said boundary gateways and the subnetwork IDs;

characterized in that the method comprises:

providing each boundary gateway with a unique subnetwork ID to correspond to the private network connected therewith; and

processes a multimedia call according to the subnetwork ID of the boundary gateway.

12. (Original) The method according to Claim 11, characterized in that, the step of providing each boundary gateway with a unique subnetwork ID further comprises:

numbering the subnetworks where all the media gateways in the domain that the call controller can control reside, and allocating a subnetwork ID unique in the entire domain to each of them; and

providing each of the boundary gateways with an unique subnetwork ID, the subnetwork ID of the boundary gateway being consistent with the subnetwork ID of the subnetwork connected therewith, and treating the call controller as the signaling receiver of the boundary gateway.

13. (Original) The method according to Claim 11, characterized in that the step of processing a multimedia call according to the subnetwork ID of the boundary gateway further comprises:

the media gateway sending the signaling message of a multimedia terminal to the call controller to the boundary gateway connected with the media gateway;

the boundary gateway, after receiving the signaling message, establishing a signaling tunnel form the boundary gateway to the call controller according to its own subnetwork ID, and sending the signaling message through the signaling tunnel to the call controller; and

the call controller receiving the signaling message from the boundary gateway, and returning a response message to the media gateway having sent the signaling message according to the subnetwork ID of the boundary gateway.

14. (Original) The method according to Claim 13, characterized in that the step of the media gateway sending the signaling message to the boundary gateway further comprises:

the media gateway assembling the signaling message into a standard message according to the requirements of the respective protocol, and then sending it to the boundary gateway connected with the media gateway.

15. (Original) The method according to Claim 13, characterized in that the step of establishing a signaling tunnel from the boundary gateway to the call controller further comprises:

the boundary gateway determining whether the boundary gateway and the call controller is in the same subnetwork according to the subnetwork ID, and if so, the boundary gateway sending the signaling message directly to the call controller, otherwise, the boundary gateway establishing a signaling tunnel from an intermediary boundary gateway(s) to the call controller, and the boundary gateway sending the signaling message through the signaling tunnel to the call controller.

16. (Original) The method according to Claim 13 or 15, characterized in that the signaling tunnel, after being established, will remain permanently and be maintained all the time by the boundary gateway for the subsequent signaling exchanges between the connected media gateways and the call controller.

17. (Original) The method according to Claim 13, characterized in that, the method further comprises:

when the media gateway initiates the call, establishing a signaling tunnel from the call controller to the called side boundary gateway.

18. (Original) The method according to Claim 17, characterized in that the step of establishing a signaling tunnel from the call controller to the called side boundary gateway further comprises:

the media gateway initiating the call, sending the call number to the call controller;

the call controller, after receiving the call number, analyzing the call number, and sending a signaling request to the called side boundary gateway; and

the call controller determining whether the called side boundary gateway and the call controller is in the same subnetwork according to the subnetwork ID of the called side boundary gateway, and if so, the call controller sending the signaling request directly to the called side boundary gateway, otherwise, the call controller establishing a signaling tunnel through an intermediary boundary gateway(s) to the called side boundary gateway, and the call controller sending the signaling request through the signaling tunnel to the called side boundary gateway.

19. (Original) The method according to Claim 13, characterized in that the method further comprises:

when the media gateway initiating the call, establishing a media channel from the boundary gateway connected with the media gateway to the called side boundary gateway, and transferring the media traffic through the media channel.

20. (Original) The method according to Claim 19, characterized in that, the step of establishing a media tunnel from the boundary gateway connected with the media gateway to the called side boundary gateway further comprises:

the media gateway initiating the call, sending the call number to the call controller;

the call controller, after receiving the call number, analyzing the call number, and determining the boundary gateway connected with the media gateway and the called side boundary gateway;

the call controller sending a command request to establish a media channel to the calling side boundary gateway and the called side boundary gateway respectively according to the subnetwork IDs of the calling side boundary gateway and the called side boundary gateway;

the call controller receiving the information of the media ports allocated and returned by the calling side boundary gateway and the called side boundary gateway respectively, and notifying the information of the media ports to the opposite side boundary gateways respectively;

the calling side boundary gateway, after receiving the notification of the media port information of the called side boundary gateway, establishing a media channel from the boundary gateway to the called side boundary gateway;

the media gateway having initiated the call transmitting the media traffic through the established media channel; and

after the media gateway finishes transmitting the media traffic in the media channel, removing the media channel automatically.